

108th Annual Meeting The Ohio Academy of Science

Hosted by
Cleveland State University
Cleveland, Ohio
April 23-24-25, 1999

Welcome! Cleveland State University welcomes you to the 108th Annual Meeting of The Ohio Academy of Science. We invite you to explore our campus and to share in the excitement and opportunities provided in this program.

REGISTRATION: Registration is required for all meeting presenters and attendees. On-site registration will be available at a higher rate. **To assure reservations for meals, forms must be received by The Ohio Academy of Science by April 9, 1999.** Please use Registration Form on last page. Mail completed forms and fees to:

**OAS Annual Meeting Registration
The Ohio Academy of Science
PO Box 12519
Columbus OH 43212-0519
FAX 614/488-2228 (for Credit Card only)**

Registration by credit card or purchase order only will be accepted by FAX at 614/488-2228. Your packet, receipt, and name tag will be ready at the meeting registration desk upon your arrival. For further information, please call 614/488-2228.

Saturday, April 24

Registration will be held in **University Center Atrium** from 8:00 AM - 3:00 PM on Saturday. On-site registration is possible by check, VISA, or Mastercard. Cash is discouraged.

Special Acknowledgments: The Ohio Academy of Science expresses its appreciation to Metcalf & Eddy for partial financial support for this meeting.

LOCAL ARRANGEMENTS. DR. HAROLD ALLEN

PARKING. Free parking is available in Superlot #3 (corner of Chester Ave. and East 22nd Street, next to Soccer Field). University Center, one block south of Superlot #3, is located on East 21st Street, between Chester and Euclid (entrances on East 21st and Euclid Ave.). Meter parking on nearby streets.

SMOKING POLICY. Smoking is not permitted in any building on campus.

MEALS. Friday, April 23. Preregistration required by April 9th for the Ohio Academy of Science **Annual Meeting Banquet** held jointly with The Ohio Biological Survey. Saturday, April 24th. A **box lunch** is available. See registration form. Preregistration required by April 9th. **There is no Saturday evening meal.**

HOUSING. Please contact hotels and motels directly. Because another conference is taking a large number of Cleveland area hotel rooms we have reserved a block of rooms near Cleveland State University at the Comfort Inn Downtown, 1800 Euclid Ave., Cleveland. Phone 1-216-861-0001. The block of rooms will be held until April 9, 1999 under the reference "OAS Conference" at the discounted rate of \$62.00 per night + 14.5% tax + \$5.40 parking fee. To request a copy of the *Greater Cleveland Official Visitors Guide* which includes attractions, activities, entertainment, sports, shopping, restaurants, accommodations, transportation, and area maps please call the Convention & Visitors Bureau of Greater Cleveland at 1-216-621-5555

GENERAL SCHEDULE

Friday, April 23, 1999

- | | |
|-------------------|--|
| 9:30 AM - 5:30 PM | Concurrent environmental symposium arranged by Cleveland State University. See description later in program. |
| 10:00 AM | <i>Cleveland Public Library Tour</i>
Arranged by JEAN Z. PIETY
Head, Science and Technology
Dept., Cleveland Public Library |

The Main Library buildings cover an entire city block located from E. 3rd to E. 6th on Superior Avenue, and contain one of the largest research collections in the United States. Part of the complex opened in 1997. Visit the new 10 story, glass building named for Ohio's first black Congressman, LOUIS STOKES. The building creates controversy with its glass walls, colorful interiors, and its curving contours. Public artwork adorns several areas in ceiling paintings, sculpture, and photography. A peaceful garden between the buildings contrasts with the vivid colors in the LOUIS STOKES Wing. Charming small bronze figures designed by TOM OTTERNESS appear in strategic spots and on the steel gates. They lead to MAYA LIN's contemplative fountain and reflecting pool. With the neoclassic Main Building under renovation, the building program in progress limits the tour to the extraordinary new Wing and the charming garden. Transportation is easy by RTA Loop bus (50 cents). Get bus at 18th and Euclid, exit at E. 6th and Euclid, walk one block north. The granite and glass 39 million pound building looms up at 525 Superior Avenue. Meet in the lobby at 10:00 AM. Contact Ms. JEAN PIETY, Cleveland Public Library, Science & Technology Dept., (216) 623-2932. Email Jean.Piety@cpl.org. Website <http://www.cpl.org>.

- | | |
|----------------|---|
| 2:00 - 5:00 PM | Ohio Biological Survey
Executive Committee in
University Center Room 361 |
| 3:00 - 5:00 PM | The Ohio Academy of Science
Board of Trustees Meeting in
University Center Room 367 |

6:00 PM

Joint OAS-OBS Banquet
University Center Room 364

Academy President's Address
SPENCER E. REAMES

*Science Education: An Old
Endeavour from a New
Perspective*

SPENCER E. REAMES, in his 32nd year of teaching at Benjamin Logan High School, has been a member of the Academy for 23 years and a Fellow since 1993. He has served the Academy as the Chair or Co-Chair of Judging at the State Science Day since 1980, Vice President of the Education Section for 1983-1984 and 1991 and 1992, and he served on the Executive Committee from 1985 to 1989. He has also served on the West Central Science Day Council since 1979 and as a member of the Academy's Junior Academy Council since 1979. From 1989 to 1993, he served as the Assistant Project Director, Biotechnology, and compiled *The Ohio Science Workbook: Biotechnology* which was published through an NSF grant by the Academy. In 1998 he was elected as a Fellow of The American Association for the Advancement of Science. He currently teaches advanced biology classes at Benjamin Logan High School and serves as an instructor for the Instrument Van Project at Purdue University in the summer. He has given numerous workshops for teachers in the areas of biotechnology, fast plants, and student research. He has been recognized as a Centennial Honoree of the Academy, with a Milken Foundation National Educator Award, as an Honoree of the American Teacher Award Program and as an Acker Outstanding Teacher by the Academy. He has served as the Treasurer and President of the Association of Presidential Awardees in Science Teaching.

Saturday, April 24, 1998

7:30 AM

Special Environmental Sciences
breakfast (by invitation only;
must be pre-registered)
Hosted by Metcalf & Eddy.

8:00 AM - 3:00 PM

Registration in
University Center Atrium

9:00 AM - 11:00 AM

Morning poster and podium
presentations.

11:15 AM

All Academy Lecture
Main Classroom Bldg.
Auditorium - Room 6

J. MORGAN GROVE, Research
Forester, USDA Forest Service

*Finding the Road to Integration
on the Human Ecosystem
Highway: Some Suggested
Road Signs*

J. MORGAN GROVE has worked for the U.S. Forest Service's Northeastern Research Station since 1996 as a Research Forester in Burlington, VT., Durham, NH, and Baltimore, MD. He is a Principal Investigator in the National Science Foundation, Long Term Ecological Research Program's Baltimore Ecosystem Study (particularly as the co-team leader of the demographic and socioeconomic working group) and a developer of the NED set of decision-support tools for forest and landscape management. Additional long term social ecological research centers on the Adirondack Park Region. His research activities focus on human ecosystem and landscape studies of forested areas, participatory action research approaches, and the development of technology transfer tools. He has a B.A. in Architecture and Environmental Studies from Yale College, a M.F.S. in Community Forestry from Yale University, and a Ph.D. in Social Ecology from Yale University.

12:00 NOON

Special Recognition Ceremony
of newly elected Fellows of
The Ohio Academy of Science

12:30 PM

Box lunch (reservations by April 9)

Lunch available on your own at
several off-campus locations.

1:30 PM

Division Business Sessions
(See abstracts for locations.)

1:30 PM - 5:00 PM

Afternoon poster and podium
presentations

5:15 PM

OFFICIAL NOTICE
of Annual Business Meeting
for Academy Members Only
Main Classroom Rm 105

Sunday, April 25, 1999

8:30 AM

Natural History Field Trip:

*A visit to historic Lake View Cemetery, The Cleveland
Museum of Natural History, and Euclid Creek*

Organized by JOE HANNIBAL

The Cleveland Museum of Natural History

We will meet at The Cleveland Museum of Natural History for coffee and donuts and a brief tour of parts of the Museum. We will then go to Cleveland's historic Lake View Cemetery, which is not far from the Museum. There will be stops at the graves of the outstanding early naturalist JARED POTTER KIRTLAND (1793-1877), geologist JOHN STRONG NEWBERRY (1822-1892), and COL. CHARLES WHITTLESEY (1808-1886), an archeologist, geologist and historian. We will also visit the Garfield Monument. JAMES ABRAM GARFIELD (1831-1881), 20th President, was a key supporter of government sponsored scientific investigations and a proponent of government support for education. We will also exam-

ine historic tombstones, an old quarry site, and other features in the cemetery. This part of the trip will end around 11:30. Afterward, we will travel to nearby Euclid Creek to view classic exposures of Devonian strata (Chagrin Shale through Berea Sandstone) and the site of an old bluestone quarry. The trip will end around 2:00 PM.

Field trip participants should arrive between 8:15 and 8:30 AM at the main entrance to The Cleveland Museum of Natural History, 1 Wade Oval Drive, University Circle, Cleveland. Park in the Museum lot. Travel is by private cars. Lunch is on your own; there will be an opportunity to purchase food. Attendance is limited to the first 30 registered participants. Cost \$5.00 payable to The Ohio Academy of Science at time of registration. For more information call JOE HANNIBAL at 216-231-4600 ext. 233 (e-mail: jhanniba@cmnh.org) or Scott Brockman at 614-265-7054.

Sunday, April 25, 1999

09:30 AM

Rocky River Field Trip

Arranged by ROGER THOMA, Ohio EPA

A field trip to the lower Rocky River to examine the effects of urban run off on the structure and quality of fish communities. The resident fish community will be sampled using electrofishing gear and examined for species composition, species abundance, external parasites, deformities, tumors and lesions. How each species, its abundance and external anomalies reflects the impacts of nonpoint pollution will be discussed in terms of the Ohio Environmental Protection Agency experience and evaluation technique. Fish species no longer found in the system will also be discussed. Participants that wish to help sample will need chest waders and rubber gloves (captured fish will be brought to shore for those without waders). Participants should meet at the Metro Parks marina located on the Rocky River. The site may be found by taking Rt2/Detroit Road east from the I-90 exit ramp, turning right immediately after crossing the bridge over the Rocky River and turning right at the first road. If you cross the river again you've gone too far. We will meet in the parking areas on the left next to the river (about 100 meters down the park road). Additional information (and a map) may be obtained by calling Roger Thoma at 330-963-1141. Email ER.THOMA@EPA.STATE.OH.US

NOTE: There will not be a Plant Sciences Field Trip this year. You are encouraged to visit the colorful gardens of the Cleveland Garden Center on University Circle.

Cleveland State University

About the University

Cleveland State University is a state-assisted, urban university with a mission to provide a comprehensive range of opportunities in higher education primarily, but not exclusively, to residents of northeastern Ohio. Cleveland State has over 15,000 students enrolled in 65 baccalaureate degree programs, 34 separate master's degree programs, two

advanced law degree programs, educational specialist degree programs, and six doctoral programs. Nearly one third of Cleveland State's students are enrolled in graduate or professional programs.

The University's seven colleges are the College of Arts and Sciences, the James J. Nance College of Business Administration, the College of Education, the Fenn College of Engineering, the Maxine Goodman Levin College of Urban Affairs, the Cleveland-Marshall College of Law, and the College of Graduate Studies. Descriptions of the University's baccalaureate programs are contained in the Cleveland State University Bulletin: Undergraduate Issue. Programs in the College of Law are described in the Cleveland-Marshall College of Law Bulletin. Graduate program descriptions are found in the CSU Bulletin: Graduate Issue (<http://www.cusohio.edu/gradstud/>).

Other important academic divisions of the University are Continuing Education, which offers a variety of special, non-credit learning opportunities, and the Division of Student Affairs, which provides comprehensive academic and student-support services, including assistance to students with disabilities, the English to Speakers of Other Languages Program, mentoring services, career services, outreach programs, and more.

Another program of interest is Project 60. This program, administered through the New Student Center, offers senior citizens the opportunity to take undergraduate and graduate courses on a tuition-free, non-credit, and space-available basis regardless of their academic backgrounds. Project 60 allows elders to sample undergraduate and graduate courses without being admitted formally to a degree program.

History of the University

Established as a state-assisted university in 1964, Cleveland State was created out of the buildings, faculty, staff, and curriculum of the former Fenn College, a private institution of 2,500 students that was founded in 1929.

Cleveland State University's historical roots go back to the 19th century. During the 1880s, the Cleveland YMCA began to offer day and evening courses to students who did not otherwise have access to higher education. The YMCA program was reorganized in 1906 as the Association Institute, and this in turn was established as Fenn College in 1929. A significant contribution of Fenn College was its pioneering work in developing internships for students in engineering and business. These internships, as joint ventures between the college and local businesses and industries, provided students with professional contacts and experience as well as an affordable education. The historic Fenn Tower still stands as a reminder of these early years, when the University already had a strong commitment to equal access to higher education.

The Cleveland-Marshall College of Law, Ohio's largest law school, traces its origins to 1897 when the Cleveland Law School was founded. It was the first evening law school in the state and one of the first to admit women and minorities. Another evening law school, John Marshall School of Law, was founded in 1916. In 1946, the two schools merged to become the Cleveland-Marshall School of Law. Cleveland-Marshall became part of Cleveland State University in 1969.

Cleveland State University

is pleased to present a

**Symposium on
Urban Environmental Issues****Friday, April 23, 1999**

(University Center, Room 1)

There is no charge for this symposium.

Urban environmental issues are by definition, complex and highly multidisciplinary. They represent issues which involve not only the traditional environmental concerns of clean water, clean air and healthy ecosystems, but also force us to deal with the unique and complex factors that make up a city. A few of the important concerns include environmental justice, political jurisdictions, varying socioeconomic factors, and the need for a concentrated and sustainable economy. Recently there has been renewed interest in the issues of economic health, urban revitalization and sustainability, all of which are intertwined.

In celebration of EarthFest 1999, the Cleveland State University Symposium on Urban Environmental Issues will explore the intersections of science, technology and policy and how these disciplines bring unique strengths to the discussion that, when combined, may offer new solutions to old problems.

**Session I: Urban Environmental Issues:
A Regional Focus**

9:30 to 11:00 AM

Chair: KATHLEEN L. BARBER, Ph.D., Professor of Political Science, (Ret.) John Carroll University

Urban environmental problems exist in a regional context where many authorities must agree on solutions. Experts from Northeastern Ohio will discuss how a specific problem, that of the appearance of endocrine disruptors in the waters of the Great Lakes are identified, communicated to the public and concerned decision-makers, and turned into effective action. The discussion will include attention to gaps in current practices by suggesting how things should work in contrast to how they currently do.

9:30-10:15 Ecosystems as Indicators of Human Health: The Great Lakes

GERI EILEEN UNGER, TerrAqua Environmental Science and Policy, LLC

9:30 - 10:00

DAVID W. ORR, Ph.D., Department of Environmental Studies, Oberlin College

Lunch on your own.

Session II: Urban Environmental Issues and Science

12:30 - 1:30 PM

Chair: MICHAEL WALTON, Ph.D., Associate Professor of Biology, Department of Biology, Geology, and Environmental Science, Cleveland State University

As urban sprawl continues to claim natural and rural lands at an accelerating pace, the study of urban ecosystems and the ecological consequences of urbanization have become a major challenge for ecological scientists. Basic questions concerning the structure, function, sustainability, and potential for restoration of urban ecosystems remain largely unanswered. The speakers in this symposium session have dealt directly with these issues and will speak from their experiences of the challenges of natural resource management and habitat restoration in urban contexts. RICHARD COOKSEY of the U.S. Forest Service will speak on forest fragmentation in urban areas, and efforts to restore forests in the delicate, endangered, but highly-impacted Chesapeake Bay watershed. THOMAS STANLEY, Chief of Resource Management of the Cleveland Metroparks, will speak on natural resource management in the Cleveland metropolitan area, and the difficult challenge of reconciling public opinion with ecological science in controversial management decisions.

12:30 - 1:00 PM Watershed Protection and Restoration: The Importance of Forests to the Chesapeake Bay

RICHARD A. COOKSEY, Forest Resource Planner, Chesapeake Bay Program, US Forest Service

1:00 - 1:30 PM The Challenges of Managing Natural Ecosystems in an Urban Environment THOMAS STANLEY, Chief of Natural Resources, Cleveland Metroparks

Session III: Urban Environmental Issues and Technology

1:45 - 2:45 PM

Chair: MARK TUMEO, Ph.D., Director, Center for Environmental Science, Technology and Policy, and Associate Professor of Civil and Environmental Engineering, Cleveland State University

Technology has long been a major player in the environmental arena. The focus, however, traditionally has been on end-of-the-pipe solution, which has been driven mainly by regulatory requirements. Over the past 10 years, there has been increasing attention in the technology fields to the concept of re-thinking technological processes so as to reduce, or eliminate, environmental impacts. The emergence of green manufacturing, pollution prevention, and total product life-cycle analyses are a few of the innovations that demonstrate this new trend. In this session, DR. ED COHEN-ROSENTHAL, Director of the Work and Environment Initiative at Cornell University, and DR.